DOCUMENT RESUME

ED 249 346 CE 039 104

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TITLE Factors Effecting Learner Motivation in Distance Education: The Interaction between Learner Attributes and Learner Course Performance. REDEAL Research Report #9. Project REDEAL Research and Evaluation of Distance Education for the Adult Learner.
INSTITUTION Athabasca Univ., Edmonton (Alberta).
PUB DATE Oct 80
NOTE 42p.; Also sponsored by Innovative Projects Fund, Advanced Education and Manpower. For related documents, see CE 039 133 and CE 039 147.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Achievement; Academic Persistence; *Adult Students; *Aptitude Treatment Interaction; *Distance Education; Postsecondary Education; Student Attitudes; Student Behavior; *Student Characteristics; Student Educational Objectives; Student Interests; *Student Motivation; Student Needs
IDENTIFIERS Athabasca University AB

ABSTRACT

The interaction between learner attributes and instructional treatments has attracted considerable interest in the educational literature. This investigation attempted to capitalize upon the learner-attribute-by-learner-performance interaction concept in exploring the factors that have an impact upon learner motivation in distance education. Four courses being delivered at Athabasca University were selected and the student information system used to provide data on individual learner performance and learner attributes. Data were collected and analyzed in relationship to 19 hypotheses relating learner attributes to learner performance. A discussion of the results relevant to each hypothesis is presented along with a general discussion of the importance of this type of analysis for the development of distance education. (Author/KC)

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ED249346

# Factors Effecting Learner Motivation in Distance Education: The Interaction Between Learner Attributes and Learner Course Performance

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REDEAL Research Report #9

October, 1980

Sponsored by

Innovative Projects Fund

Advanced Education & Manpower

and

Athabasca University

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## Abstract

The interaction between learner attributes and instructional treatments has gained considerable interest in the educational literature. The present investigation attempted to capitalize upon the learner-attribute-by-learner-performance interaction concept in exploring the factors which impact learner motivation in distance education. Four courses being delivered at Athabasca University were selected and the student information system used to provide data on individual learner performance and learner attributes. Data was collected and analyzed in relationship to 19 hypotheses relating learner attributes to learner performance. A discussion of the results relevant to each hypothesis is presented along with a general discussion of the importance of this type of analysis for the development of distance education.

Factors Effecting Learner Motivation in Distance Education:
The Interaction Between Learner Attributes and Learner Course Performance

Led primarily be the work of Cronbach and Snow (1977), a growing interest in what has been largely referred to as "Aptitude-Treatment Interaction Effects" continues to increase within educational research at all levels. Although there has been considerable confusion regarding the appropriate measures for aptitude (Schnell, 1978) and the practical use of the concept (Snow, 1977), the concern for individual differences inherent in the aptitude-treatment interaction approach appeals to many educators.

Simply stated, the aptitude-treatment interaction approach involves looking at the effects of whatever instructional treatment is being offered to learners in relationship to not only the large experimental group, but to sub-groups representing aptitude levels within the larger group. The basic argument for examining such possible interaction centers around the probability that the treatment being tested may have a dramatic effect for learners with certain aptitudes (e.g. those with lower aptitudes) while having little effect on learners with different aptitudes (e.g. those with higher aptitudes). Cronbach and Snow (1977) have argued that educational researchers must take this individual difference problem into consideration or risk finding no differences in treatment effects (i.e. main effects) when a real and important difference may exist (the interaction effect).

In the minds of many educational researchers and practitioners, the aptitude-treatment interaction concept makes both intuitive and theoretical sense. However, in many educational settings the

availability of reliable aptitude measures on individual learners is non-existent and impossible to obtain. Moreover, in many innovative and "open" institutions of higher education standardized measures of incoming learner ability (e.g. test scores, and other intelligence measures) are not only unavailable, but acquiring them would be viewed by many as entirely inappropriate and unethical. Therefore, educational researchers in these settings, although potentially interested in individual differences, are often blocked from using the aptitude-treatment interaction concept.

Where does the educational researcher turn in order to explore the possible interaction between individual differences in the learner population and instructional treatment effects? The answer may lie partially in defining individual differences in a way which does not require aptitude measurement. That is, to determine measures of individual difference in the learner population and explore the relationship between those differences with respect to particular treatments may begin to provide answers to the general question inherent in the aptitude-treatment approach.

The present study was an attempt to determine the interaction between a wide variety of "attribute" characteristics of the adult learning population at Athabasca University and learner performance in courses (a measure of the treatment effect). This "learner-attribute-by-learner-course-performance-interaction effect" was interesting for several reasons. First, because Athabasca University is interested in providing an equal opportunity for learning to anyone over the age of 18 regardless of previous academic background,

the question of whether the university is providing that opportunity emerges. That is, open admission is only one measure of success. The behaviour of learners, especially learners of varying types (e.g. no previous post-secondary experience) provides a more complete picture of the equal-opportunity-for-learning picture.

A second reason why exploring the interaction between learner attributes and learner course performance is interesting relates directly to the lack of information regarding the types of learners who are having success in distance educational programs. This lack of information makes systematic modifications of instructional treatments almost impossible. This problem becomes especially important when the application of relatively expensive treatments (e.g. computer-assisted instruction) or the use of relatively sophisticated instructional design strategies (i.e. concept programming) are being considered. Knowing the magnitude of the effect of existing instructional treatments within any institution, the effect of those same treatments for various types of learners, and being prepared to investigate both effects when new instructional treatments are proposed, should provide an empirical base useful in institutional planning and priority setting.

Finally, a clearer understanding of interaction effects in institutions that cater mainly to part-time adult learners is of prime theoretical interest. The current lack of a comprehensive model for the instructional treatment and motivation of the adult learner, let alone the beginnings of a complete theory of adult learning, can be

problematical for institutions and practitioners attempting to design instructional treatments for adult learners.

## Method

The data used in this study were taken directly from the Athabasca University computerized student information system. That system contains all responses representing demographic characteristics of individual learners obtained at the original time of learner enrollment in the university. The system also records all performance data on individual learners including per credit exam mark (if available), number of days to writing the exam, and information regarding the number of credits individual learners completed in each course. The information in the Athabasca University student information system was entered into working files and analyzed using standard SPSS programs.

For the purposes of this analysis four courses representing typical packaged, distance delivered courses at Athabasca University were chosen. They were:

1 Introduction to Interpersonal Communications (229) 3 credits

2 Administrative Principles (232) 3 credits

3 Literary Forms and Techniques (210) 6 credits

4 Canadian History (224) 3 credits

The learner cohort groups for these courses were defined as those learners who enrolled in the periods shown below:

| | | | | |
|---|---|---|---|---|
| 1 | Communications 229 | August, 1978 | - Dec. 1979 | n = 113 |
| 2 | Admin. Principles 232 | September, 1978 | - Aug. 1979 | n = 293 |
| 3 | English 210 | August, 1978 | - Aug. 1979 | n = 120 |

4 History 224 August, 1979 - Dec. 1979 n = 30

N = 556

Course Characteristics

As described above, the four courses selected were typical Athabasca University packaged courses being delivered using the Athabasca University distance delivery model. That model can be generally described by the following characteristics: first, the course package is mailed to the learner. This package typically contains one or more texts, a student workbook, a student manual, and in some cases audio tapes. The amount of reading required in a course differs considerably from one course to the next. In the above sample of courses as many as eight texts were required in one course (English 210) while a single text was used in two courses (Communications 229 and Admin. Principles 232). Second, students are generally given specific instructional objectives covering the materials they are asked to study. Practice questions and/or assignments which may be marked and marks given toward final grades usually relating to those objectives are included in the student workbook with accompanying instructions in the student manual. Third, each student is assigned a telephone tutor. Telephone tutors can be reached by students at specific times without charge to the learner. Tutors also contact learners periodically by telephone. Fourth, learners in three credit courses are given six months to complete the course and learners in six credit courses are given 12 months. Learners requesting

more time pay a $10-per-month fee for extension. Fifth, with the exception of History 224 which has only one examination at the end of the course, all courses typically have an exam at the end of each credit. Exams are written by learners either at Athabasca University under the supervision of an Athabasca University staff member, at a learning center, or at a location determined by the learner with a person designated by the university as the proctor for the examination. Sixth, face-to-face contact is generally not required for packaged distance delivered courses. However, at the end of Communications 229 a mandatory workshop must be completed by all learners. In addition, optional seminars were conducted in English 210 and History 224 for those learners wishing to attend. Finally, the courses selected were taken from the two undergraduate degree programs at Athabasca University. History 224 and English 210 were courses in the Liberal Studies Program and Communications 229 and Administration 232 were courses in the Bachelor of Administration program.

## Experimental Design

The data taken from the student information system were analyzed in relationship to a series of hypotheses. The hypotheses used in this study were selected and amended from an original set specified by Project REDEAL during the planning of research and evaluation activity (see REDEAL Technical Report #1). The complete listing of hypotheses used in this study is shown below [1]:

a) Learners completing courses will have higher examination marks than learners not completing courses.

b) The sex of the learner will have no bearing on completion probability.

c) The age of the learner will have no bearing on completion probability.

d) Learners applying to Athabasca University for advanced credit for courses completed at other institutions prior to enrollment at Athabasca University will have higher completion rates.

e) Learners with prior post-secondary educational experience will have higher completion rates.

f) Learners who are also enrolled in programs outside of Athabasca University will have higher completion rates.

g) Learners who indicate that they prefer to learn on their own rather than in groups or in a combination of situations will have higher completion rates.

h) Learners indicating that they are enrolling for career reasons will have higher completion rates.

i) Learners indicating that they anticipate having more than 10 hours available each week for studying will have higher completion rates.

j) The majority of learners completing courses will take longer than the amount of time available using Athabasca University's policy of two months per credit (i.e. 180 days for three credits and 365 days for six credits).

k) Learners enrolled in Athabasca University degree programs will have higher completion rates than learners not specifying a degree program.

l) Learners indicating that they enrolled at Athabasca University because of distance from existing institutions as their major problem will have higher completion rates than learners enrolled for time, financial, or educational reasons.

m) Learners successfully completing a course at Athabasca University will have higher completion rates in a subsequent course.

n) Learners who enroll in more than one course at Athabasca University will have a higher completion rate.

Results and discussion of these hypotheses form the basis of the remainder of this paper.

## Results

The results are presented in the order that they appear as hypotheses in the Method section of this paper. To obtain the results reported in this section the data was averaged across the four courses selected for this analysis. Data for individual courses are not presented.

Figure 1 goes here

Hypothesis a)

Learners completing courses will have higher examination marks than learners not completing courses.

Figure 1 clearly indicates that learners completing courses are receiving higher marks than those learners not completing courses (given that History 224 has only a single examination, the data for that course are not included in this analysis). The absolute difference in percentage of learners scoring higher than 80% compared to those scoring lower than 80% increases over credits and indicates an advantage to the completer group. Although completers usually score higher than 80% on all credits, learners withdrawing from courses show progressively lower marks over credits.

Figure 2 goes here

Hypothesis b)

The sex of the learner will have no bearing on rate of course completion.

Figure 2 indicates that 35% of the women who enroll in any one of the four courses selected complete while only 16% of the men who enroll actually complete.

Hypothesis c)

The age of the learner will have no bearing on rate of course completion.

The data on percentage of completers for those learners over the age of 35 years in comparison to those under 35 indicates no difference. Twenty-eight percent of the learners over the age of 35 completed in comparison to 25% of the learners under the age of 35. It should be noted that 63% of the total sample were less than 35 years old (37% were over 35).

Figure 3 goes here

Hypothesis d)

Learners applying to Athabasca University for advanced credit for courses completed at other institutions prior to enrollment at Athabasca University will have higher completion rates.

Figure 3, panel 1, presents the percentage of course completers who applied for advance credit versus those who did not apply. The data indicate that 12% more of the people who applied for advance credit were completers (35% versus 24%). However as the figures on the top of the histogram bars indicate, the group not applying for advanced credit was over four times larger.

Hypothesis e)

Learners with prior post-secondary educational experience will have higher completion rates.

Figure 3, panel 2, presents the percentage of learners who completed courses and who had differing amounts of prior post-secondary educational experience. The groups were divided into those who had up to and including high school and a second group of those who had post-high school education. There was a 10% difference between the two groups with the prior educational experience group showing the highest completion percentage (29%). However, the sample size for the prior educational experience group was over two and one-half times the size of the no post-secondary educational experience group.

Hypothesis f)

Learners who are also enrolled in programs outside of Athabasca University will have higher Athabasca University course completion rates.

Figure 3, panel 3, presents the percentage of course completers who were enrolled in a second educational program outside of Athabasca University versus those who were not. There was only a 6% difference in completion rates between the groups with the slight advantage going to the group who were enrolled in a second educational program (31% versus 25%). It should be noted that the total number of persons enrolled in a second education program represented only 12% of the total sample of learners across all four courses.

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Figure 4 goes here

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Hypothesis g)

Learners who indicate that they prefer to learn on their own rather than in groups or in a combination of situations will have higher completion rates.

Figure 4 presents the data indicating the percentage of course completions for learners preferring various learning situations. There were no significant differences between completion rates for any learning preference group. Five percent of the total sample selected learning in a group as their main choice. Fifteen percent were not sure of their preference. The large majority of learners chose learning on their own or learning in a combination of situations as their preference (80% of the sample).

Figure 5 goes here

Hypothesis h)

Learners indicating that they anticipate having more than 10 hours available each week for studying will have higher completion rates.

Figure 5 presents the percentage of course completions in relationship to learners anticipated study time availability each week. Although learners anticipating they would have one to five hours available had the highest completion rates, the differences in completion rates between groups was small. The largest majority of learners indicated they anticipated having

over ten hours available each week versus all learners anticipating having under ten hours reveals only a slight advantage for the under-ten group (29% versus 22%). However, 17% of the entire sample were undecided.

Hypothesis i)

> Learners indicating that they are enrolling for career reasons will have higher completion rates.

Of the total sample enrolled in the four courses 48% said they were enrolled for career reasons and 52% were enrolled for other than career reasons. There was little difference in the percentage of completers between groups with 25% of the career reason learners completing in comparison to 26% of the other than career reasons learners completing courses.

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Figure 6 goes here

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Hypothesis j)

> The majority of learners completing courses will take longer than the amount of time available using the Athabasca University policy of two months per credit (i.e. 180 days for three credits and 356 days for six credits).

Figure 6 shows the percentage of course completers for learners progressing at a rate of progress commensurate with the Athabasca University policy (see hypothesis above) versus those progressing at a slower rate. The three panels in figure 6 represent various ways to calculate the

comparison. Panel 1 uses only three credit courses (Communications 229, History 224, and Administration 232). The results clearly indicate that a large majority of the course completers (68%) were progressing at a rate slower than the Athabasca University policy.

Panel 2 examines progression rates for course completers for all four courses using the policy for three credit courses and six credit courses combined together. Although the absolute difference in rates of progress for completers was not as great as when only three credit courses were used in the analysis (panel 1), the large majority of the completers were progressing at a rate slower than Athabasca University policy (64%).

Panel 3 utilizes a third method to calculate progress rate. All four courses are used in the analysis represented by panel 3. However, only the first three credits of English 210 (a six-credit course) are used. This type of analysis indicates an even larger difference in completion percentage for each progression rate group. Seventy-two percent of the course completers progressed at a rate slower than the Athabasca University policy, with only 28% of the course completers progressing at a rate commensurate with the Athabasca University policy.

Hypothesis k)

> Learners enrolled in Athabasca University degree programs will have higher completion rates than learners not specifying a degree program.

The percentage of course completers within each major category of degree program at Athabasca University is shown in figure 7. There was

little difference in the percentage of completers specifying degree programs versus those who were not sure. Of the total number of learners in the four course sample, 38% were enrolled in either the Bachelor of General Studies (Liberal Studies, Applied Studies, or Administrative Studies) or the Bachelor of Arts Programs. Thirty-one percent of the total sample indicated they were not sure of which degree program they wanted to be enrolled in. Only sixteen percent of the total sample were enrolled in programs other than the Bachelor of General Studies or Bachelor of Arts (including special program students taking Communications 229 and/or Administration 232).

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Figure 7 goes here
Figure 8 goes here

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Hypothesis 1)

> Learners indicating that they are enrolled at Athabasca University because of distance from existing institutions as their major problem, will have higher completion rates than learners enrolled for time, financial or educational reasons.

Figure 8 presents the percentage of completers having different reasons for attending Athabasca University. The learners indicating distance from existing institutions as their major reason for attending Athabasca University had the highest completion rate. However, it was only slightly higher than learners indicating other reasons for attending Athabasca University. The reasons for attending Athabasca University differed considerably for

completers with 34% indicating time as their reason, 21% indicating distance as their reason, 18% indicating educational program as their reason, 18% indicating finances as their reasor, and only 9% not answering the question.

Figure 9 goes here

Hypothesis m)

Learners successfully completing a course at Athabasca University will have higher completion rates in subsequent courses.

The data presented in figure 9, panel 1, indicates that learners completing courses do have a higher rate of course completion in subsequent courses than learners withdrawing (48% versus 28%). Given that the sample chosen had learners who were still active in courses and that these learners also appear to have high probabilities of subsequent course completion, the evidence for the hypothesis appears even stronger (i.e. 28% of active learners also complete subsequent courses in comparison to 20% of activities who withdraw from subsequent courses).

Hypothesis n)

Learners who enroll in more than one course at Athabasca University will have higher completion rates.

Figure 9, panel 2, presents data indicating no difference in rates of course completion between learners only taking one course in comparison to

those taking more than one course. It should be noted that the number of learners taking more than one course represents only 15% of the total sample of learners.

## Discussion

This discussion is organized into two major sections: section one deals directly with the results obtained for each hypothesis; section two presents a general discussion.

### Discussion of Each Hypothesis

Hypothesis A. Hypothesis A was concerned with the marks received by learners completing courses in comparison to those who do not complete courses. The results clearly indicate that marks were higher for completers than for withdrawals. Since the mid-point of the 60% to 100% passing mark range was used as a division point, the data indicated that completers are generally scoring above 80% (approximately 70% or more of the completers score above 80%).

These results can be interpreted in several ways. First, it is possible that "brighter" learners get higher marks and are more likely to complete courses because they are brighter (i.e. marks are just an indication of their preparedness for university work). In contrast, it is also possible that getting good marks provides enough extra motivation to increase the probability of course completions.

The relationship between marks and completion rates, although supporting the first hypothesis, is somewhat surprising. It is surprising in that Athabasca University purports to use a criterion-referenced grading scheme. That is, grades over 60% are considered "mastery" marks and therefore reflect the fact that the learner has mastered the material for that credit. Given a pure mastery model, one would not expect that mark would predict completion to any degree. However, these results would suggest that the Athabasca University grading system is not a mastery model, but a ranking of learners from 60 to 100% (i.e. similar to ranking learners from one to nine or from A to F). The fact that few learners earn marks over 90% provides additional support for this conclusion.

Hypothesis B. Hypothesis B indicates that the gender of the learner

will have no bearing on course completion. However, the results provide substantial evidence that this hypothesis is not supported, with more than twice as many women completing courses than men. Although it is possible to speculate about why women are more successful in completing courses, there is no existing data to address the question empirically. However, the dramatic increase in completion rates for women would suggest further investigations into that phenomenon should be made.

Hypothesis C. Hypothesis C indicated that the age of the learner would have no bearing on course completion. The data clearly indicate this hypothesis is supported. The data also indicate that a majority of the learners enrolled in the sample courses were under the age of 35 (63%). However, Athabasca University's intention to reach the adult learner (all people over the age of 18) is apparently being realized in terms of course enrollment. In addition, although completion rates for both groups are low, apparently both age groups are getting the same opportunity for learning.

Hypothesis D. Hypothesis D was concerned with the effect of learners applying for advanced credit on course completion rates. Two major results addressing this hypothesis were obtained. First, in support of the hypothesis was the fact that 36% of the people applying for advanced credit were completers in comparison to only 24% of persons not applying (a 12% difference in favor of the advanced credit applicants). Second, the results indicate that only a small proportion of the total

sample of learners applied for advanced credit (15%). This would indicate that either the majority of learners attending Athabasca University do not have credit toward a degree at Athabasca University or that many incoming learners do not have an understanding of the possibility of applying advanced credit toward their degrees. If the former situation described above is true, and it most likely is, these results would suggest that Athabasca University is more effective with the learner who has already participated in credible courses at other institutions. Given the traditional nature of the content of programs at Athabasca University, it is not surprising that learners interested in applying for advanced credit have higher levels of motivation to complete courses at Athabasca University.

Hypothesis E. Hypothesis E gets at the question partially addressed in hypothesis D above, by asking about the effect of prior post-secondary educational experience on learner course completion rates. The results indicate that a higher percentage of completers had post secondary educational experience. However, only 10% more of the completers had such experience.

These results, combined with the results obtained in relationship to hypothesis D would indicate the importance of prior post-secondary educational experience in terms of Athabasca University course completion. Learners wishing to apply that experience as advanced credit toward a degree appear to be more successful in completing courses.

Hypothesis F. Hypothesis F indicates that learners who are enrolled

in programs outside of Athabasca University will have higher course completion rates in Athabasca University courses. The data provide little support for this hypothesis. Not only are a small percentage of learners enrolled in a second educational program outside of Athabasca University, but that group only had 6% more completers than the group not enrolled in a second educational program. Because of the direct relationship between this hypothesis and hypothesis K (completion rates within degree programs), a further discussion relevant to this hypothesis will be presented with the discussion of hypothesis K.

Hypothesis G. All incoming Athabasca University learners are asked about their preferences for learning situation on the enrollment form. Hypothesis G suggests that learners indicating they prefer to study "on their own" will be much more successful than learners indicating another learning situation preference. The results do not support that hypothesis. Approximately the same percentage of completers were found in all learning situation preference groups. However, the possibility that learners did not understand the question on the enrollment form or that there is little difference between learners indicating a preference for learning on their own versus learning in a combination of learning situations seems likely. The fact that approximately 50% of the learners indicated they preferred a combination of learning situations, even after enrolling in an institution which places the learners largely on their own, would tend to support the latter interpretation.

Hypothesis H. Hypothesis H indicated that learners indicating that they anticipate having more than 10 hours available each week for studying will have higher completion rates. The results do not provide support for this hypothesis. However, the data base in relationship to this question is suspect for the following reasons: first, it is doubtful whether learners are in a good position to know exactly how much study time they will require in courses delivered in a way they had not previously experienced Second, the amount of study time required in various courses per week varies considerably. For example, the time required for English 210 per week is much greater than is required for Communications 229 (mainly due to the amount of reading between these courses). Finally, learners indicating they anticipate having more than 10 hours available each week may be somewhat unrealistic. Tentative evaluation results obtained with other Athabasca University courses would suggest that learners typically spend from four to eight hours per week studying.

Hypothesis I. Incoming Athabasca University learners are also asked why they are attending university upon enrollment. Hypothesis I asks if learners who are enrolling for career reasons have higher course completion rates than learners enrolling for other reasons (e.g. personal or educational reasons). The results do not support the hypothesis. An equal percentage of learners completed courses from all groups indicating different reasons for attending university. Again, this result is not too surprising given the traditional nature of the programs at Athabasca University and the fact that these programs are not directly tied to specific careers.

Hypothesis J. Hypothesis J provides direction to the pursuit of information regarding the length of time it takes learners to complete courses. Athabasca University has a policy which suggests that learners should progress at a rate of one credit completion every two months. Of course learners can go faster than that rate. However, if they go slower than that rate they must either complete later credits at a faster rate or request an extension which costs them $10 per month. The results confirm the hypothesis that learners are taking longer than the one credit per two month rate recommended by Athabasca University. A comparatively large percentage of completers take longer than six months to complete a three-credit course (or the first three credits of a six-credit course). Although there was only one six-credit course sampled, the results would also suggest that completers take longer than one year (365 days) to complete a six-credit course.

These results reveal a very interesting trend in learner performance. It appears that a large majority of successful learners (i.e. those completing courses) progress at a rate which is slower than the rate the university anticipates learners will progress. Several explanations for this phenomenon emerge. First, it could be possible that the amount of work required of Athabasca University courses cannot be completed by the average part-time adult learner in the time period specified by the university, even when the learner has complete freedom over the speed at which he/she progresses. Second, it could be possible that actions taken by the university (e.g. grading exams, processing forms, etc.) could be delaying

learners' progression and causing them to take longer. Finally, a combination of factors may be working together to cause learners to take longer to complete courses.

Regardless of the underlying reasons for the slower rate of progress for course completions, the existing data strongly suggest that additional research and evaluation efforts should occur in order to learn more about this phenomenon. Not only is rate of learner behavior interesting for theoretical reasons, it has a significant relationship to practical concerns as well (e.g. cost per learner completion, staffing, and time to completion of degrees to name just a few).

Hypothesis K. Hypothesis K indicates that learners enrolled in Athabasca University degree programs will have higher course completion rates than learners not specifying a degree program. The results obtained in this study do not provide support for this hypothesis. As was the case with hypothesis I (learners enrolling for career reasons will have higher completion rates) the data do not support the general notion that learners who have a goal, be it a career or degree, have a higher probability of completion.

Although the data do not support this hypothesis, caution should be exercised in interpreting the data base relevant to this question. It is entirely possible that a significant majority of the learners placed in degree program categories are placed there somewhat artificially. That is, a positive response to an item on an enrollment form asking about degree programs may not represent much of a commitment to completing that program. Whether people indicating that they wish to be in a degree

program are serious about completing that program or are just "shopping for educational experiences" may be an important question relevant to this analysis.

Hypothesis L. One of the prime reasons for the existence of Athabasca University is to allow people who do not have ready access to existing post-secondary institutions an opportunity to take courses and complete programs of study. Hypothesis L asked whether learners who were enrolled because they did not have access to existing institutions because of distance factors had higher completion rates. The results indicate that learners so specifying this situation had higher completion rates in comparison to learners indicating that time, educational program, or financial reasons were the prime motivation for enrolling at Athabasca University. However, the advantage for the distance factor was slight, especially in comparison to the time factor. Moreover, the reasons for attending Athabasca University were widely distributed between factors with time being the largest group.

Hypothesis M. Hypothesis M indicates that learners successfully completing a course at Athabasca University will have higher completion rates in subsequent courses. The results indicate that this hypothesis is strongly supported by the data. Almost 50% of course completers tend to complete other courses in comparison to less than 30% of withdrawals. When the learners who were categorized as "active" in the existing sample eventually complete or withdraw, it is highly likely that the percentage of completers who complete other courses will go up even more (assuming the majority of active learners will eventually complete).

Although these results are encouraging for those people interested in the potential of complete programs of study, that encouragement should be tempered by the number of learners who complete courses ir the first place and by the even smaller percentage who complete courses and take another course. (Only 15% of the total sample completed a sample course and only 7% of the total sample completed more than one course.)

Hypothesis N. Hypothesis N asked whether learners who enroll in more than one course at Athabasca University will have higher completion rates. Although this hypothesis indicated that the answer should be yes, there was no support from the data for such an effect. Learners' completion rates were almost identical whether they were enrolled in one course or more than one course.

## General Discussion

Although the results of this investigation into learner performance at Athabasca University reveal some very interesting facts, the reader should keep in mind that the sample of courses used for this investigation was somewhat limited. Whether the sample is representative of the majority of courses remains to be tested (work is just being completed, using 16 packaged courses entered into the same analysis as used in this report). Future investigations will indicate whether these findings generalize to other Athabasca University courses. If this study is not found to be representative, changes to the interpretation of hypothesis presented in this study must be made.

Even though a more complete sample of courses may reveal more accurate information, it appears safe to conclude that, in general, the learner completion rates in Athabasca Univeristy courses are far from satisfactory. Moreover, it is highly unlikely that the representativeness of this general finding will change significantly when other courses are added to the sample (i.e. a recent report by Athabasca University's Office of Institutional Studies indicated that two of the courses sampled in this report were in the highest learner completion rate group).

It also appears relatively safe to conclude at this point that attempting to better understand the success rate of Athabasca University courses by looking at the types of learners who are having success can provide interesting information. However, after working extensively with the data base providing that information it is painfully clear that that data base must be further refined and better organized for the purposes of more detailed and accurate analysis. Now that it has been demonstrated that it is possible to work with such a data base, it appears time to begin working with the information system to improve its capabilities along the lines indicated in this paper.

The results presented in this paper also clearly point to problems with the existing course design and delivery system at Athabasca University. In several cases it appears that existing Athabasca University policies and procedures are not being followed. Given that some of these policies (e.g. the mastery grading model) have been clearly demonstrated to have a direct effect upon learner behaviour, it is imperative that they be

dealt with by the institution as soon as possible.

Taking a more theoretical perspective, the results obtained in this investigation provide support for the general notion underlying Cronbach and Snow's (1977) Aptitude-Treatment Interaction Effect. Although standardized measures of learner aptitude were not used, it is clear that various situational and personal learner "attributes" do tend to have a relationship to learner behaviour in courses. It appears that various types of learners are differentially effected by the individualized instructional environment at Athabasca University. Only further work with this relationship will allow for additional information regarding the specific effects of course characteristics upon various types of learners to be obtained.

In general, the results of this investigation may appear to have created more questions than answers. Given the current lack of empirical information on learners participating in distance education in general, and at Athabasca University specifically, such a result is not surprising. However, it is important that continued and sustained efforts to get answers to these questions take place. Without such a data base workers in distance educational institutions will not be able to make clear-cut decisions and, as a result, be forced to make judgments under the same conditions as existing distance learners; at a distance from the source of information with limited control over that information base.

## References

Crawford, J. Interactions of learner characteristics with the difficulty level of instruction. Paper presented at the Annual Meeting of the American Educational Research Association, New York, 1977.

Cronbach, L. & Snow, R. Aptitudes and instructional methods. New York: Urbington Publishers, 1977.

Glazer, R. Individuals and learning: The new aptitudes. Educational Researcher, 1, 5 - 13.

Snow, R. E. Individual Differences and Instructional Theory. Educational Researcher, 1977, 6, 11 - 15.

Tobias, S. Achievement treatment interactions. Review of Educational Research, 1976, 46, 61 - 74.

## Footnotes

[1] The following hypotheses included in the interim report were deleted from the list and not included in this study (see pages 43 - 44 of REDEAL Technical Report #1): Working hypotheses, group one, #1, #2, and #3, group two, #2; and group three, #3. Group two, #3 and #7; and group three, #2 hypotheses were modified.

Figure 1

Courses 229, 232 and First Three Credits of 210 Compared with Learner Completion and Withdrawals for Exam Marks>80%

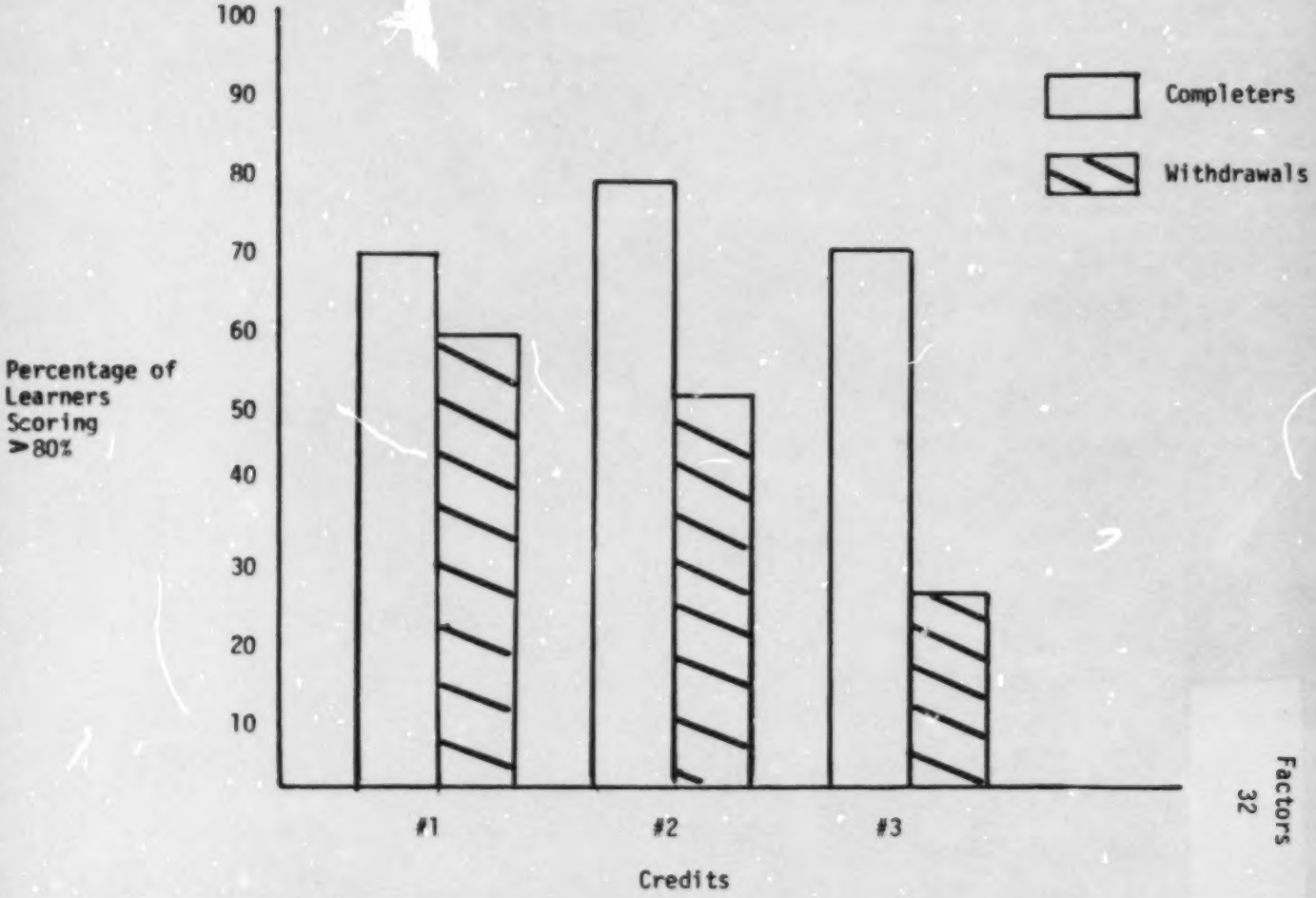
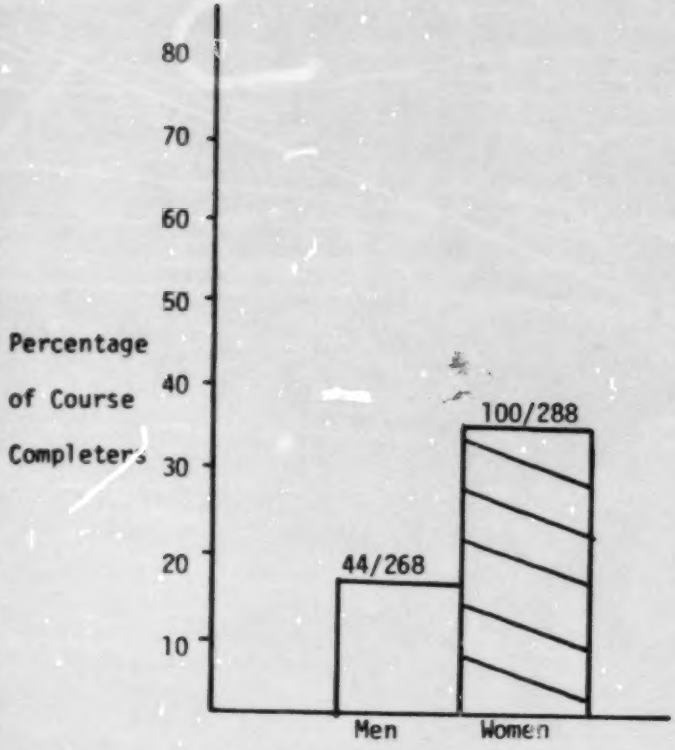


Figure 2

Percentage of Course Completers who were Male or Female




a/b - # completing
b - # sample size

Figure 3

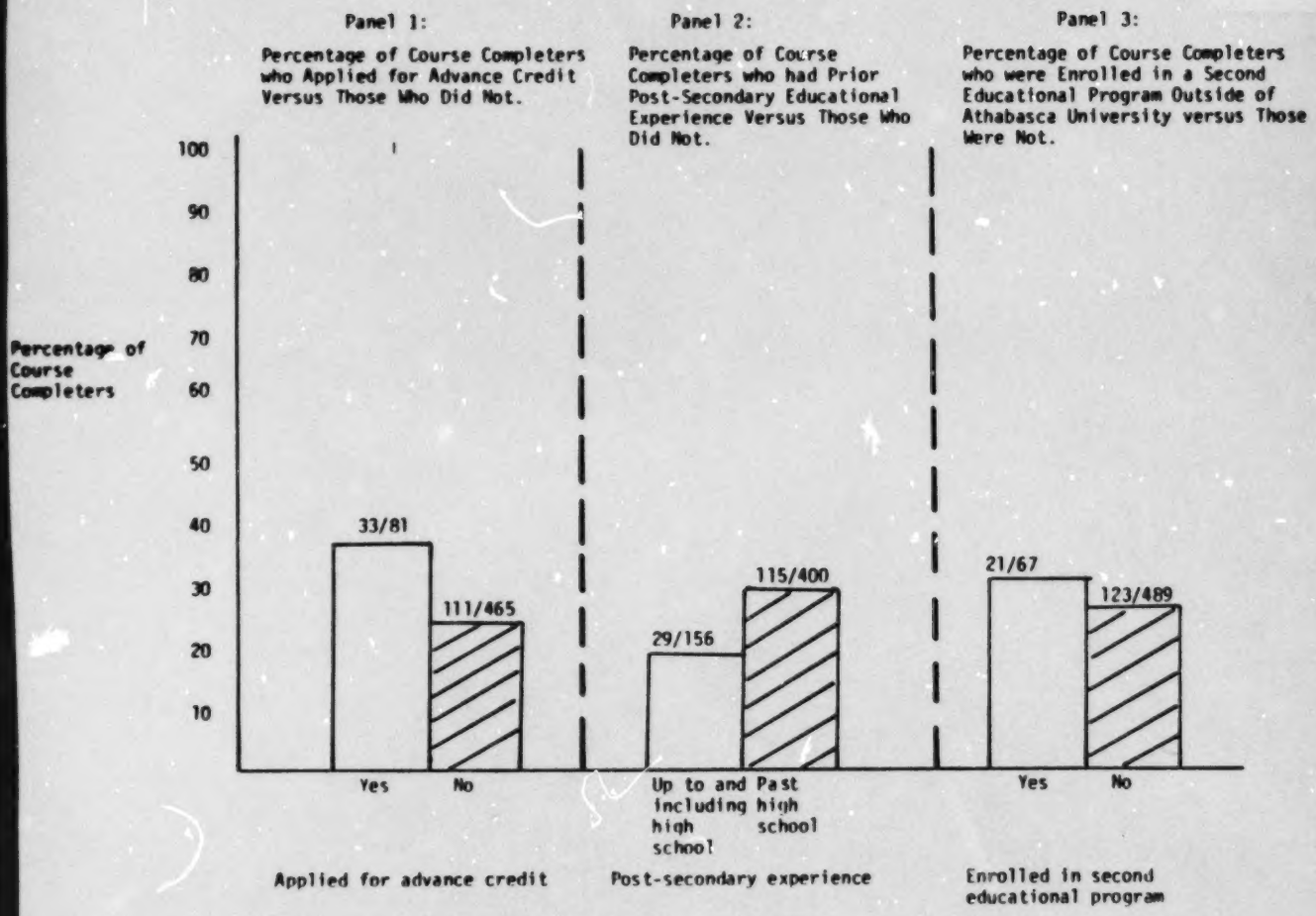

Panel 1:
Percentage of Course Completers who Applied for Advance Credit Versus Those Who Did Not.
Panel 2:
Percentage of Course Completers who had Prior Post-Secondary Educational Experience Versus Those Who Did Not.
Panel 3:
Percentage of Course Completers who were Enrolled in a Second Educational Program Outside of Athabasca University versus Those Were Not.
Percentage of Course Completers
100
90
80
70
60
50
40
30
20
10
33/81
111/465
29/156
115/400
21/67
123/489
Yes
No
Up to and including high school
Past high school
Yes
No
Applied for advance credit
Post-secondary experience
Enrolled in second educational program

Figure 4

Percentage of Course Completers for Learners Indicating a Preference for Learning Situations

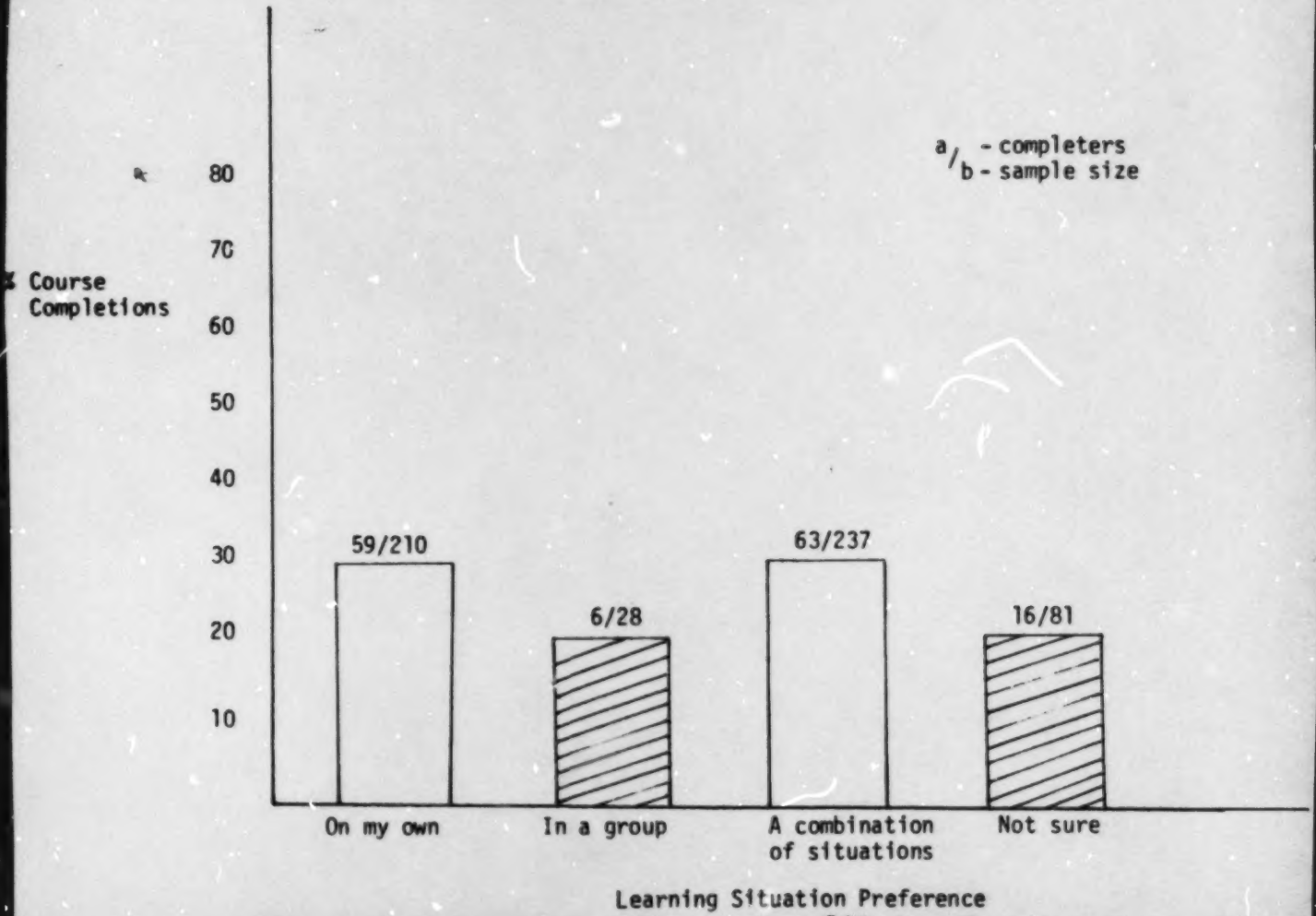


Figure 5

Percentage of Course Completions in Relationship to Learners' Anticipated Study Time Available Each Week

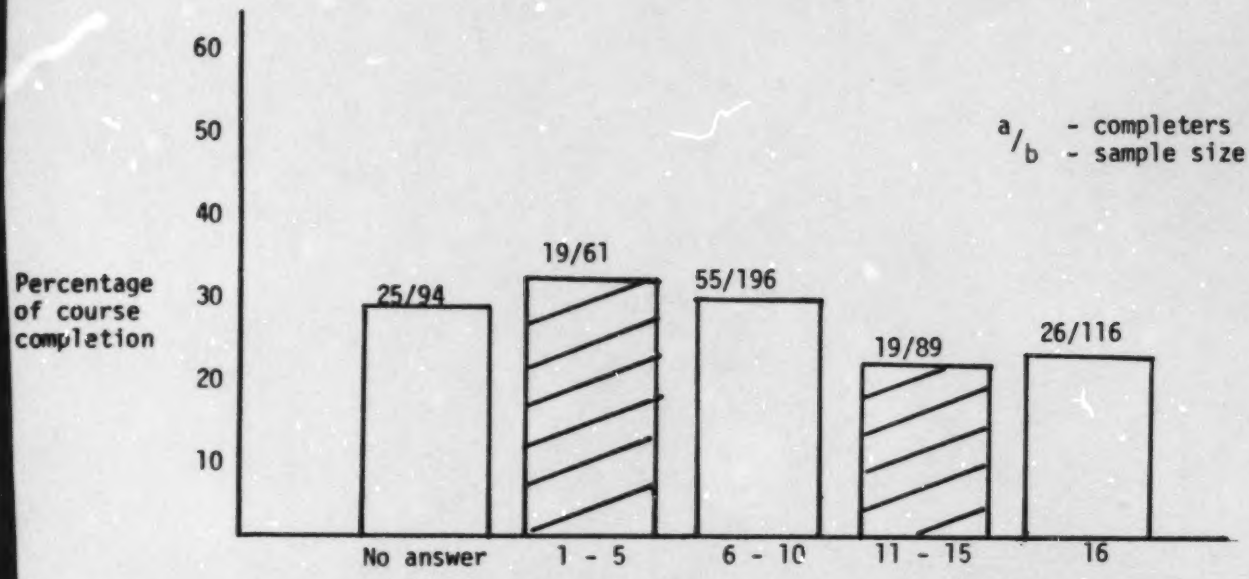


Figure 6

Percentage of Course Completers for Learners Progressing at a Rate Commensurate with Athabasca University Policy in Comparison to Those Progressing at a Slower Rate

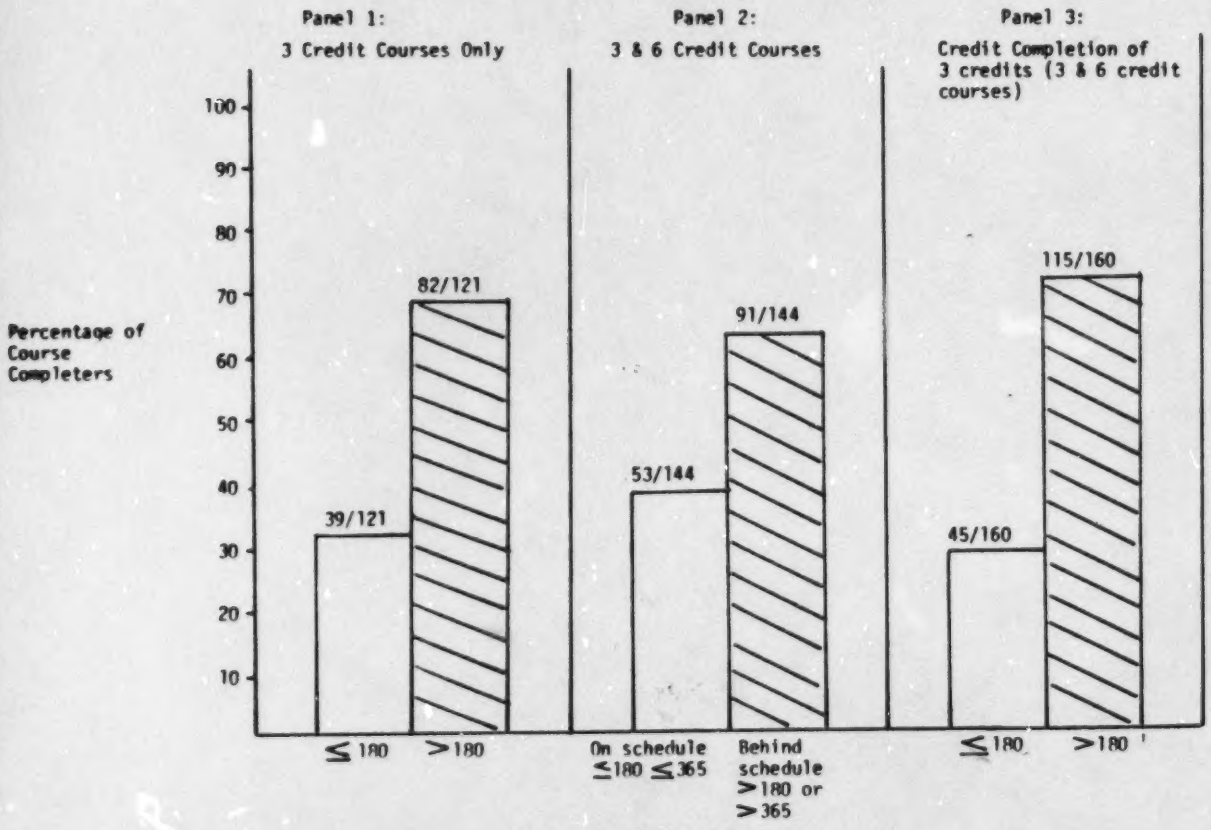


Figure 7

Percentage of Course Completers for Learners Enrolled in Various Degree Programs at Athabasca University

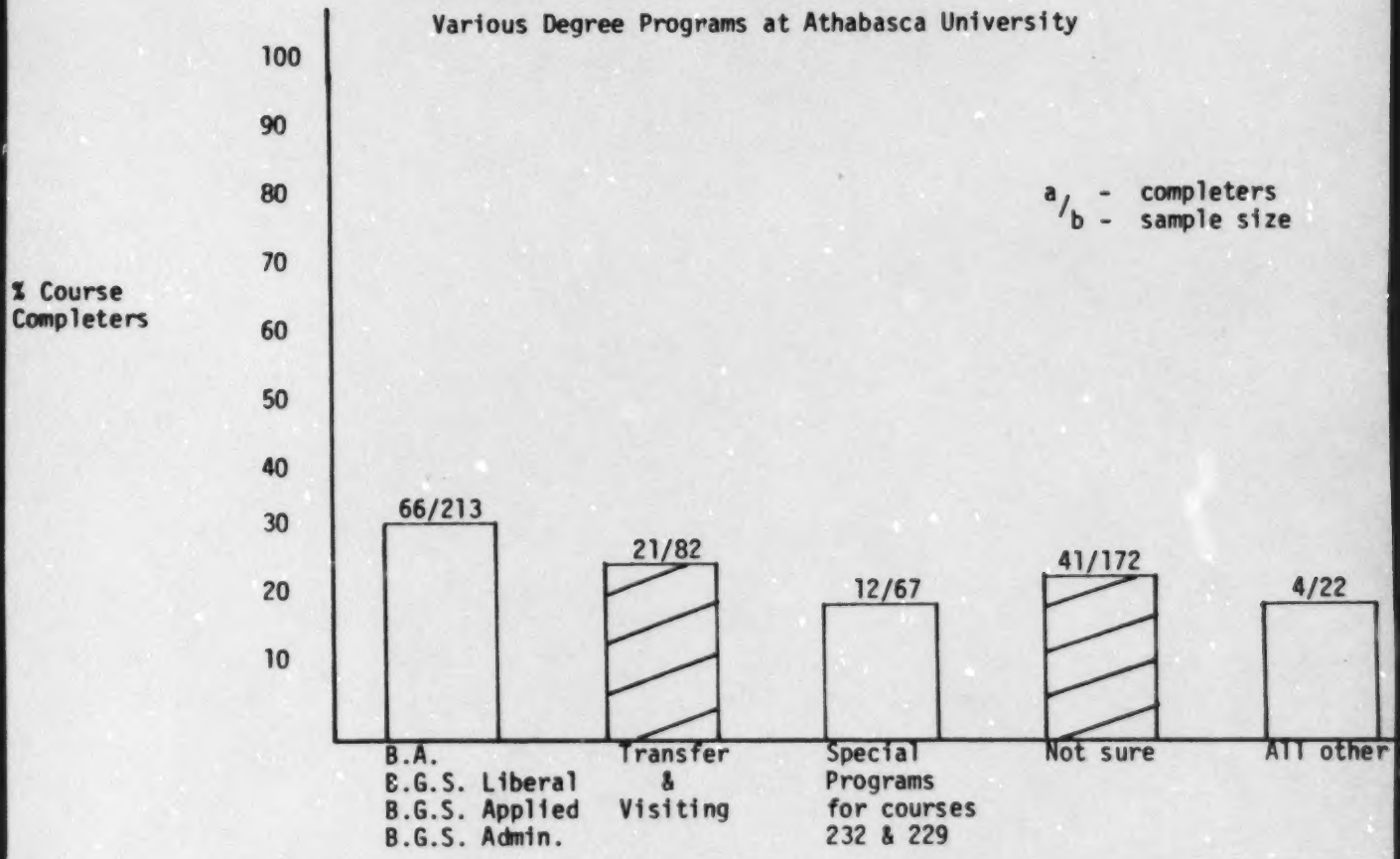


Figure 8

Percentage of Completers Having Different Reasons for Attending Athabasca University

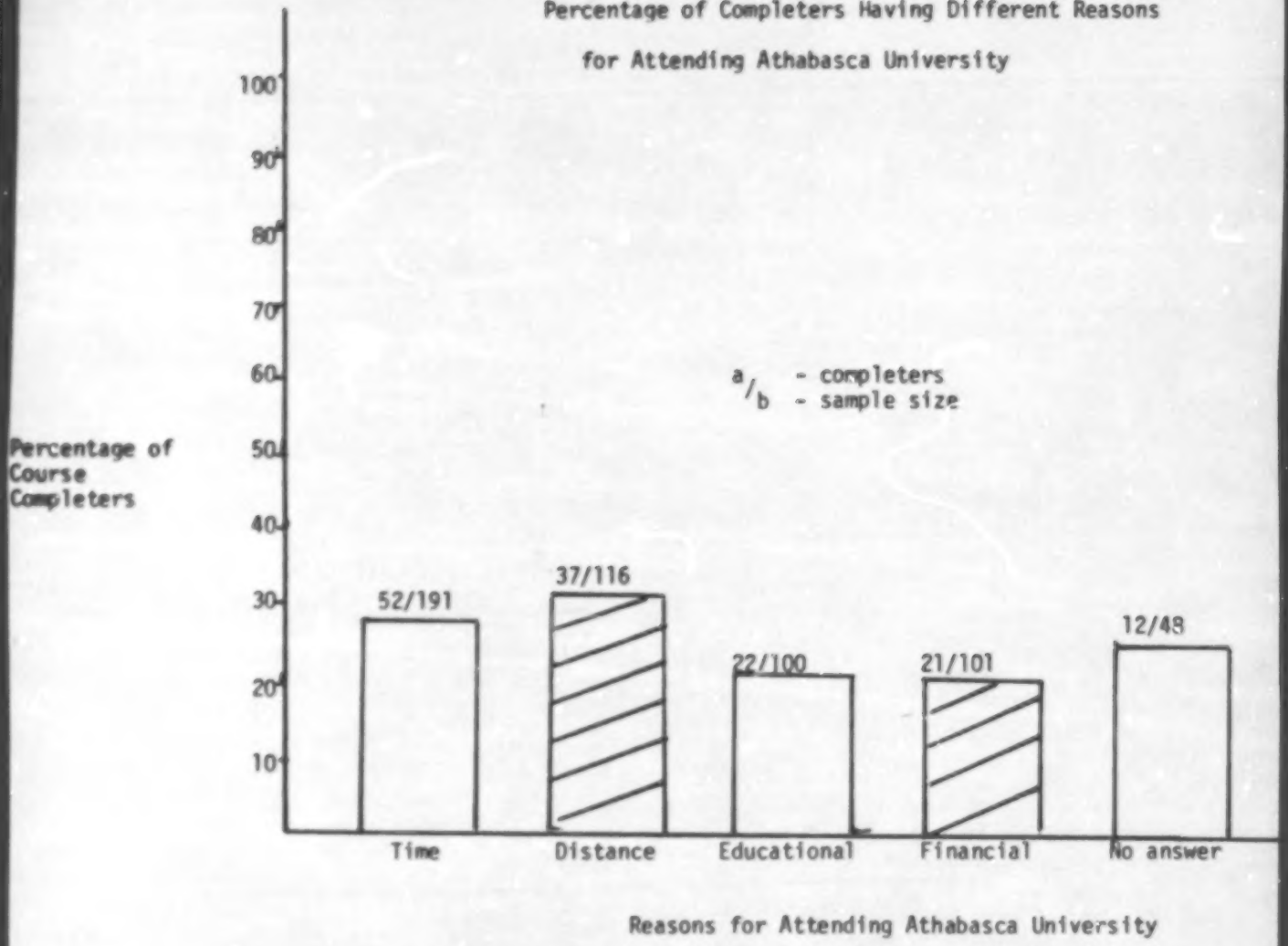
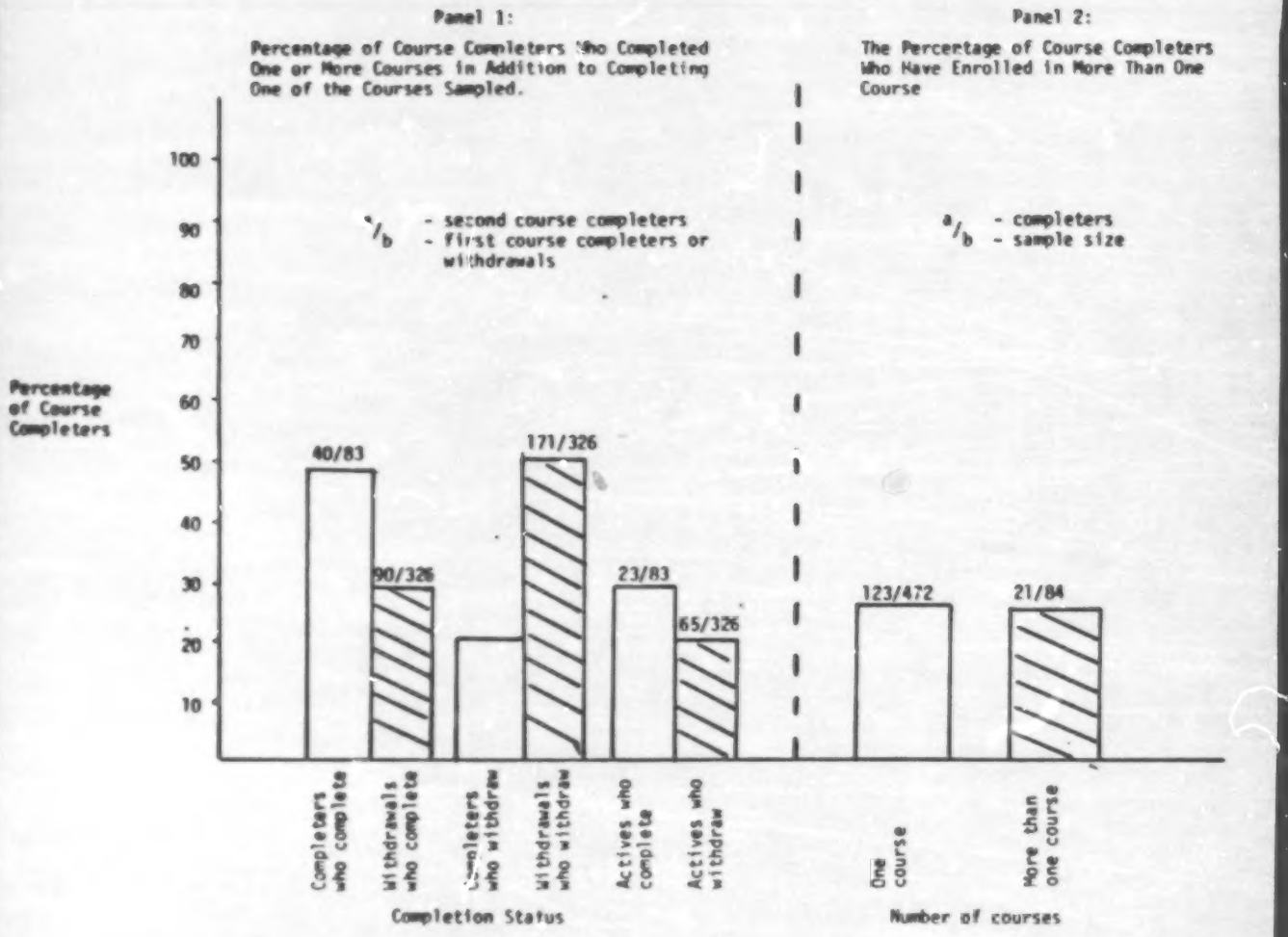


Figure 9


Panel 1:
Percentage of Course Completers Who Completed One or More Courses in Addition to Completing One of the Courses Sampled.
a/b - second course completers
b - first course completers or withdrawals
Percentage of Course Completers
100
90
80
70
60
50
40
30
20
10
40/83
90/326
171/326
23/83
65/326
Completers who complete
Withdrawals who complete
Completers who withdraw
Withdrawals who withdraw
Actives who complete
Actives who withdraw
Completion Status
Panel 2:
The Percentage of Course Completers Who Have Enrolled in More Than One Course
a/b - completers
b - sample size
123/472
21/84
One course
More than one course
Number of courses